



BEVERLY DOWNTOWN DESIGN GUIDELINES

DECEMBER 2003

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for
the City of Beverly
Planning Department

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INTRODUCTION AND PURPOSE OF DESIGN GUIDELINES

These Design Guidelines have been prepared to improve the attractiveness and economic success of the Downtown area. They will serve as a design reference for building owners, merchants, designers, and builders. The guidelines will assist the Beverly Community Development Department in reviewing of building facade improvement projects and awarding financial incentives to building owners who wish to implement them. Such guidelines could also be used to assist the Beverly Design Review Board if review of facade improvements were included in its purview. These guidelines help to explain what features could be reviewed by that board in the future.

The Design Guidelines are intended to direct storefront and streetscape improvements for the Downtown target area which includes Rantoul, Cabot and Elliott Streets and areas extending approximately 200 feet to either side of these streets. Where parking lots extend further, the boundary should be extended to the edge of those parking areas.

The Design Guidelines have been reviewed at a public presentation on December 20th, 2003 by members of the Beverly Design Review Board, the Beverly Main Streets Design Committee, the Ward II Civic Association, City Council members, State Representative Mary Grant, and Beverly residents and business owners. Chan Krieger & Associates would like to thank the following persons and groups for their expertise, guidance, and support:

Mayor Thomas M. Crean
Planning Director Debra A. Hurlburt
Assistant Director Leah Zambernardi
Beverly Design Review Board
Beverly Community Development
Beverly Main Streets

GOALS FOR BEVERLY DOWNTOWN DESIGN GUIDELINES



Cabot Street's winding path illustrates Beverly's 18th century origins and is lined with its most important buildings.

While the quality of streets, sidewalks, and other public places is the primary concern of the municipal government, responsibility for the quality and character of buildings and shops falls primarily to the private building owners and occupants. Facades, storefronts, signs, hardware, and displays have significant effect on the experience of visitors and patrons in the Downtown. When the design of a building and its shops respond to the character of the surrounding neighborhood, it contributes to the total quality of the street. If individual expression dominates and the surrounding context is ignored, the quality of the visual environment suffers. Within these guidelines there is ample latitude to vary storefronts and signs to express the nature of the business and the identity of the

owner without impairing the surroundings.

The objectives for a program like this are twofold: to retain or preserve the qualities of the built environment which have evolved over the course of the City's development; and to develop the continuity of blocks, individual buildings, and shopfronts. With effective participation, the commercial district of Beverly can create a more consistent and attractive image, making it more competitive with other nearby shopping areas and centers.

As the occupancy and types of stores change over time and decisions are made to renovate, opportunities occur to make significant improvements to the streetscape. Sensitive renovation and new construction is not difficult and may often be less expensive than standard modernization and renovation techniques. This approach is in keeping with the goals of the City and its two national register Historic Districts.

DESIGN CONTEXT

The City of Beverly has noteworthy examples of both 19th century and 20th century architecture and groups of significant commercial buildings within the study area. Other streets in the downtown consist of collections of single and multifamily housing. Several larger mill and civic buildings also contribute individually to the environment and the historical integrity of Beverly and downtown. All of these environments contribute to the interest and viability of the downtown as a living museum of Beverly's unique history.

Fish Flake Hill Historic District

Beverly's two National Historic Districts are continuous along most of Cabot Street extending to either side by at least the width of the first property. The Fish Flake Hill Historic District covers 35 acres and 152 properties. The district is mostly comprised of 18th and 19th century residential structures belonging to the early development of the city. These include Italianate, Greek Revival and Federal styles along Cabot Street, lending the lower end of Cabot Street a residential character not found in the adjoining downtown district. Two notable commercial structures, Bell Hall (89 Cabot Street) and the Pingree Block (100 Cabot Street) mark the transition to the retail and commercial core of Cabot Street closer to City Hall.

Beverly's Central Business District

Cabot Street from Central Street to Dane Street was registered as a National Historic District in 1982. The district represents a range of architectural styles from the 18th to the 20th century and helps to illustrate the historical development of Beverly. The buildings and landscapes within the 46 acres, include St. Mary's Church (253 Cabot Street), the First Parish Church (225 Cabot Street), The First Baptist Church (211 Cabot Street) of which only the steeple remains. Two important founders' homes, those of John and Andrew Cabot, are located within the district, now housing the Beverly Historical Society (117 Cabot Street) and City Hall (191 Cabot Street) respectively. The Odd Fellows Hall (188-194 Cabot Street) is one of the more prominent examples of late 19th century (Venetian Gothic) commercial structures lining the street.



The many examples of civic architecture within the Central Business District



The John Cabot House on Cabot Street, now home to the Beverly Historical Society

Rantoul Street

Rantoul Street runs for nearly a mile from the historic wharf district at the Salem Bridge in the South to the intersection with Cabot Street in the north. The street is lined with a wide variety of buildings ranging from early industrial warehouses to homes that have largely been converted to retail uses. The Post Office and Edwards School are located on the eastern side of the Street, while the Beverly Train Depot is located midway on the west side at O'Dell Park. Several newer developments along Rantoul Street have eroded the commercial street edge with gasoline service stations and large parking lots. A number of buildings are in dilapidated condition, while a greater number have been altered over the years with commercial additions.



The Southern Gateway is dominated by signs lights and parking areas



One of the better examples of retail development at the Northern Gateway (499 Rantoul)

Southern Gateway

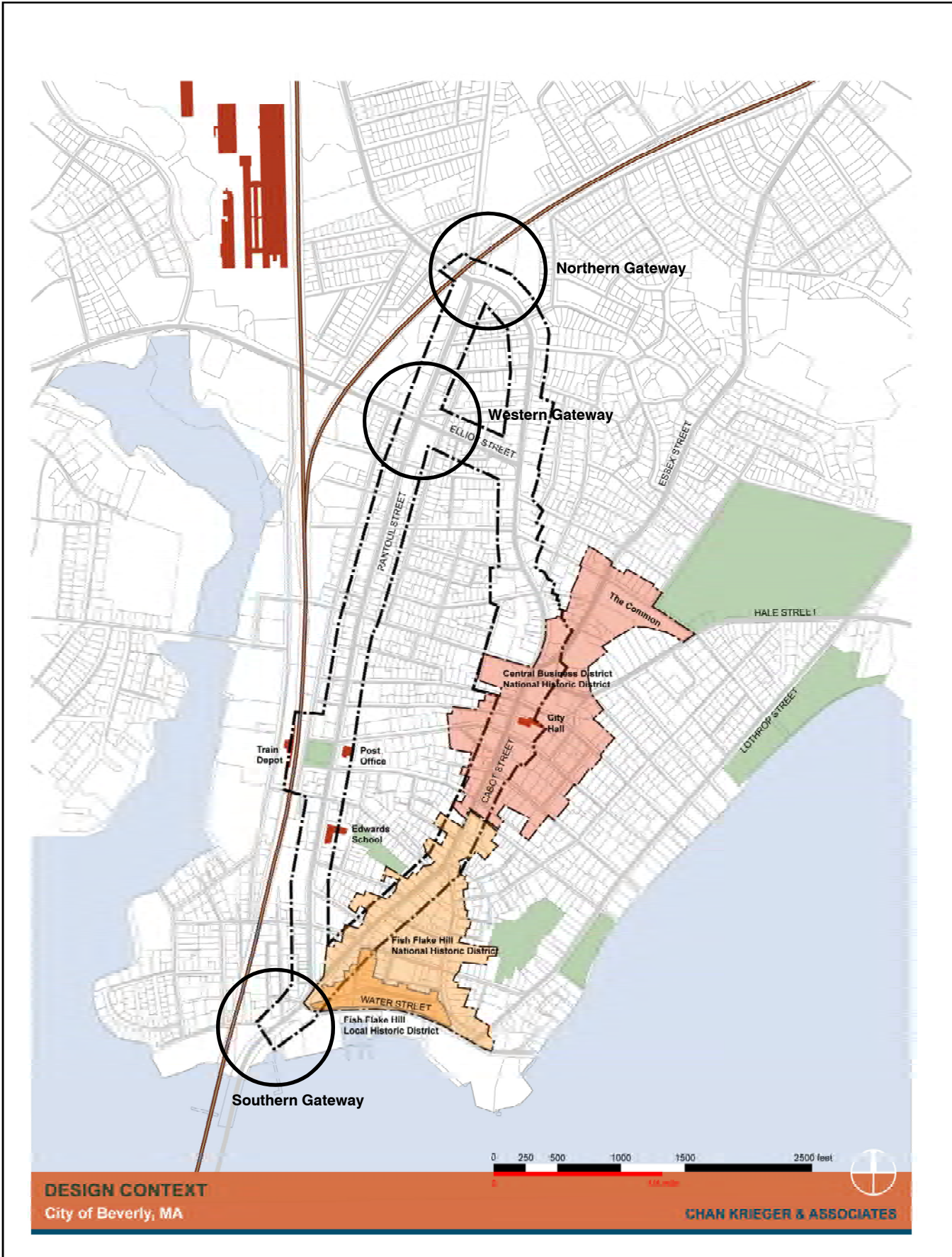
The Junction of Rantoul and Cabot Street is immediately adjacent to some of the earliest development in Beverly. Yet the landscape that is encountered at the northern end of the Salem Bridge is hardly noteworthy as an entrance to Beverly. A wide mix of building scales, inappropriate signs, including billboards, and a large number of parking lots lend a chaotic look to this area and reduce its appeal as a pedestrian retail area.

Northern Gateway

Where Rantoul and Cabot Street meet in the north is often called Cabot Corners. A mix of automobile oriented businesses here exemplifies the difficulty of establishing design standards for a variety of environments. One noteworthy 20th century commercial building fronting on Cabot and Rantoul Street (376-380 Cabot Street and 499 Rantoul Street) should be preserved and enhanced as good example of multi-tenant retail meeting the edge of the street and establishing a pedestrian scale. The majority of the remaining commercial properties such as the Brooks Pharmacy and Burger King are set back from the street with poorly landscaped parking areas and multiple curb-cuts.

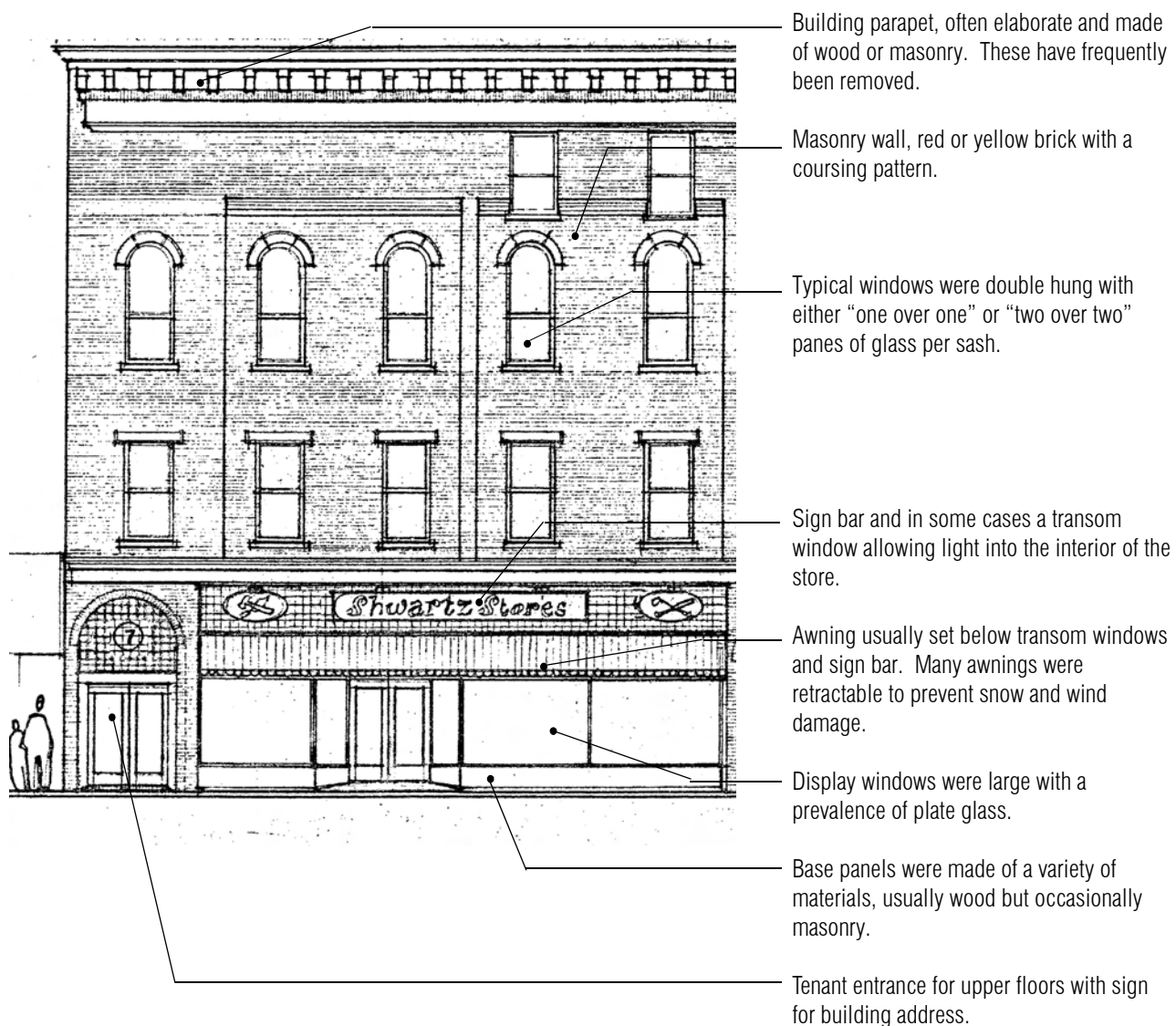
Western Gateway

Elliott Street at Rantoul is the western gateway to downtown from 128/I-95. Elliott Street has a mix of retail and residential uses that are generally well-tended but not particularly pedestrian in scale. The parking lot of Walgreens Pharmacy dominates the corner at Rantoul and Elliot Street, while at Cabot Street businesses such as Town Paint and One Stop Market (both at 317 Cabot) weaken this western entry to the business district. A combination of infill development and better controls on parking lots could improve the pedestrian experience and expand the portion of the central business district that is welcoming to those on foot.



ANATOMY OF A LATE 19TH CENTURY COMMERCIAL BUILDING

The unique visual identity of a shopping district is based, in part, on the continuity of design. Even within the context of assorted buildings assembled over a period of time where different materials and modes of construction were used, there should still exist a strong framework that binds buildings together into a larger, coherent architectural composition. Many of Beverly's buildings date from the late 19th Century and have a range of similar features that contribute a consistency of elements within the downtown. A typical brick commercial building from the late 19th century is illustrated below:



URBAN DESIGN OVERVIEW

Block Façade Design

Entire blocks should be designed to establish a sense of continuity on the street. Commercial streets display a variety of given components of an urban environment. Among them are: rows of buildings on both sides of the street, sidewalks, traffic and parking lanes, as well as an assortment of street furnishings. The block of commercial structures defines the ambiance of the street most significantly. They form a wall – an edge – that establishes the limits of the street.

Where later 20th century developments have been inserted into commercial areas they have often been done without respect for this tradition. Many newer buildings are designed with the automobile in mind, and have disrupted the patterns of commercial development by placing parking directly in front of the buildings. While gas stations and convenience retail cannot be eliminated from traditional commercial areas, guidelines can improve the quality of these developments and control new construction of this type.

Residential streets in the district display a consistency of setback and scale and new renovations or infill development should be designed to avoid disrupting existing patterns that would adversely affect the street. In addition, adjacent commercial areas should be designed so as to protect the quality of these neighborhoods with sufficient screening and protections from lights and noise.

Building Façade Design

The unique visual identity of a shopping district is based on the continuity of design. Within the context of assorted buildings assembled over a period of time where different materials and modes of construction were used, there should exist a strong framework that binds buildings together into a larger composition. Briefly stated, this framework consists of a family of physical forms and range of dimensions that establish a flexible yet recognizable pattern for the person moving along the street edge. It will be interrupted or partially nullified if the buildings are layered with discordant building elements and signs. On the other hand, continuity should not lead to sterile sameness of all the buildings. Within this system there is ample room for variety, accent and individual expression.

The foundation of this set of ordering principles is the individual building façade. The assets of the existing façade should be used to the greatest advantage. The design must integrate the pieces of the façade into a strong composition. The best approach is to remove conflicting attachments and modifications to the original architecture. Successive remodeling of some



These Cabot Street shops form a clear retail zone with variations of lights and signs set within building frames.



A good example of multi-tenant retail building with coordinated signage.

structures will have added layers of materials to the façade. These should be removed to retain the original style of the building.

In Downtown Beverly, many residences have been converted to commercial retail uses at the ground floor. Ground level conversions into retail storefronts were constructed in various styles with little regard to the original design of the building. Where retail additions are well-built and reflect the time of their construction, they serve their purposes well. Only in cases where additions were cheaply constructed or attempt to appear older than they are should renovations be considered. Renovations to such structures will have to rely upon invention of storefronts in keeping with the upper floors without the benefit of historical documentation.

Individual Storefront Design

When evaluating various options for renovating or redesigning storefronts, the following principles should be considered:

- Respect the basic form of the buildings. The form or shape of the building is the backdrop for façade details such as display windows, shop entrance ways (including doorways and surrounding glazing), as well as special decorations. Relate ground floors to upper stories by aligning openings on the street level with upper floor windows.
- Use original materials when possible, or select new materials that are compatible with existing ones. Much of the visual interest and character of a building is expressed with original materials and is lost if inappropriate substitutes are used.
- Use proportions that are compatible with the original architectural style. Specific proportions are repeated frequently along the street, creating a sense of order and familiarity amongst many of the individual buildings. Façade improvements should respect these proportions. Avoid mixing styles within the same façade, which incorporate unsympathetic proportions.
- Maintain existing decorations during façade renovations. With many building styles, it is appropriate to accentuate these decorative elements with paint colors, which contrast with the background.
- Do not try to make a building look older than it is. Most reproduced details are made at an improper scale and their application to a façade results in an awkward visual effect, and is not recommended under these façade improvement guidelines.



Renovations are set within the stone frame and architectural details have been retained.



Materials and colors are well chosen within the rich brick frame.

Rear and Side Walls

Too often, renovation and restoration are thought of as street front actions only. Yet we view our cities and their buildings chiefly in perspective. Furthermore, the visibility of rears and sides from inner block parking lots or potential pedestrian ways increases the need for renovating these less self-conscious walls and surfaces. Alleys, courtyards and other smaller pedestrian spaces can contribute to the retail environment if they are sufficiently well designed. A total renovation program must be inclusive of all the aspects of a building and site.

Generally, the sides and rear sides of commercial buildings are far simpler in architectural detail. With increased visibility from parking areas and pedestrian ways, simple housecleaning is required. Primary consideration should be given to consolidating trash and delivery areas behind walls or into interior rooms. A second goal is to remove unnecessary and unsightly mechanical systems that traditionally have been located in out-of-sight places. As mechanical ducts are periodically replaced, new systems should be relocated away from external walls, relocated to internal chases and located out of sight or in screened rooftop enclosures. Where exterior ducts are unavoidable they should be painted to match the background walls.

Signage Controls

The City of Beverly updated its sign ordinance in 2003. However, within this study area it has been suggested that further guidelines should be established that go beyond the underlying commercial zoning to enhance pedestrian character and protect historic qualities and adjacent neighborhoods. Several efforts should be undertaken to achieve these goals:

- Continue to prohibit billboards (outdoor advertising) signs within the study area. The states of Maine, Vermont and New Hampshire and two municipalities within Massachusetts (Amherst and Martha's Vineyard) have effectively banned billboards.
- Reduce municipal and state roadway directional and curb signage within the study area to reduce clutter and improve the historic qualities of the Downtown. Cabot Street is a designated State Highway (Route 22) and is thus subject to certain requirements for wayfinding and other signage requirements. The City of Beverly, however, can take some control of locating and controlling unnecessary redundancy of signs.
- Allow and encourage projecting or "right-angle" signs to improve the pedestrian environment with smaller scaled elements designed for pedestrians rather than drivers.



Many shoppers use the parking areas behind Cabot Street.



Minor enhancements could be made to service entrances.



Projecting signs can provide pedestrian scale elements along the street



Where steps are found on historic buildings, they should be preserved.



Protect adjacent residential neighborhoods from impacts such as glare and noise.

The following design guidelines will reiterate and illustrate the existing 2003 sign ordinance as it relates to protection of architectural features and details.

ADA Compliance for Historic Retail Facades

Many of the historic structures within the downtown were built with single or multiple steps separating the store from the street or sidewalk level. Often commercial buildings have been modified to ramp the sidewalks to the doorsills or otherwise make the businesses compliant with current accessibility standards, generally referred to as requirements of the Americans with Disability Acts (ADA).

The impact of ADA requirements on historic retail structures can be extreme and, if poorly executed, can diminish the quality of historic buildings. In certain downtown buildings, modifications to the sidewalks are neither possible (increasing the cross-slope of the sidewalks would, in fact render them non ADA compliant and/or dangerous) nor would extensive modifications to historic facades be desirable. In such cases, alternatives to modifications to historic facades should be considered. Ideally an alternative entrance can be easily modified to make the retail establishment accessible without affecting the primary (and generally more historic) façade. In many cases a side or rear entrance is closer to designated parking for persons with disabilities. The city's ADA coordinator will be given the opportunity to review all projects utilizing federal funding.

Protection of Residential Districts

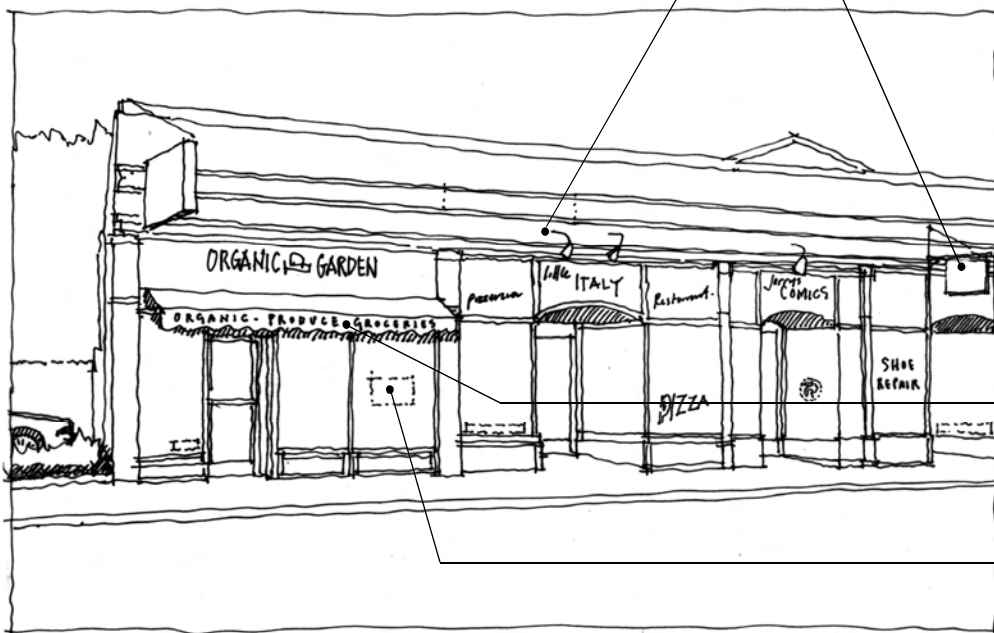
Beverly's long retail streets, Rantoul and Cabot bisect and define a significant number of neighborhoods. These neighborhoods are impacted by retail uses. Lights, noise and traffic diminish the quality of these neighborhoods, yet proximity to retail districts offers the best in city living for those residents. Developing proper safeguards to protect the views and serenity of residential uses is a secondary, but no less important, aspect of design guidelines.

CASE STUDY : Signage Controls

Multi-tenant buildings (and block facades in general) present challenges to consistency of signage. Establishing a signage “band” or zone is the most important goal in order to prevent unwanted signage from appearing on important architectural details. Removal of billboards (seen below) is another priority within the downtown.



- Remove “tenant specific” paint from architectural elements that belong to the building as a whole.
- Remove trademark signage that is not a trademark of the establishment
- Relocate applied signage away from architectural elements
- Allow lighting fixtures for applied signage
- Encourage conforming projecting signs to establish a pedestrian scale to the sidewalk



- Encourage conforming lettering on awnings that describe products and services
- Limit window signs to 20% of window areas

REVITALIZATION APPROACHES

There are several approaches to commercial revitalization and façade improvements. These approaches can be characterized by four levels of involvement in the renovation process: (1) removal; (2) repair and maintenance; (3) renovation and reconstruction; and (4) new construction. Individual efforts combine in an additive fashion to form a unified strategy for improvements. Each plays a significant role in the complete effort, taking clues from buildings previously completed as well as influencing future projects in nearby storefronts.

Removal

Removal is an easy process to complete and one, which has a significant effect. Merchants should make the following efforts when they apply this method to their buildings:

- Remove and dismantle unused signs, sign brackets, frames and hardware on the roof, cornice and front wall of the building. Along with this “unbolting”, any resulting holes and damage to the building should be repaired.
- Remove false fronts, siding, nonconforming signs, and advertising from the façade of the building. This includes artificial stone facing, metal or plastic fascia panels, mansard roofs, and any other attachments that cover and disrupt the original detailing and materials of the building.
- Remove, dismantle, or in some cases paint over signs which are no longer relevant to the store. Often signs remain on a building long after the business has left the area. These obsolete signs create visual clutter and distract from other current business signs, and can have a negative effect on business sales.
- Remove all temporary window signs and displays that do not apply to the current or forthcoming store or business.

For the most part, removal can be an inexpensive, do-it-yourself operation undertaken by the owner or tenant.

Repair and Maintenance

Repair and maintenance are two procedures that have an important effect on the overall visual quality of the street. Repair and maintenance should be part of a proprietor’s yearly routine, but are often neglected. By continually servicing and maintaining a façade,



Mansard roof and stucco siding fails to improve this building.



A clean, modern storefront with plenty of glazing works well on a wood-sided building.

storefront, or sign, store owners can avoid major expenses later. Repainting and refinishing woodwork, signs and trim, cleaning signs and replacing electric bulbs, patching concrete and brickwork, and simply cleaning the façade and windows, are a few of the tasks that must be part of an ongoing process.

The following repairs and maintenance items will assist individual store owners and tenants:

- Repair or replace damaged building components resulting from excessive and extreme weathering. This includes replacing missing and damaged building details, repairing and repainting brickwork, and patching and sealing of concrete and stonework.
- Clean or paint all building facades to remove soot, dirt and discoloration that have resulted from weathering or neglected maintenance.
- Design storefronts and façade renovations with maintenance in mind. Easy access for windows, sign and façade cleaning should be considered as well as careful selection of durable materials and easily maintained details.

Renovation and Reconstruction

When redesigning or replacing storefronts or signs, tenants or owners should keep in mind existing building structure. Some useful guidelines to consider are:

- Design new storefronts to fit within the building frame as formed by columns, piers and cornices.
- Do not remove, destroy or cover up existing architectural detailing.
- Select and use new materials that are compatible with the existing building materials.
- Design new storefronts to relate to upper levels of the building façade.
- Separate storefronts should consistently locate signs within existing sign bands.

In addition to respecting these design guidelines, appropriate removal and repair procedures must be undertaken during the renovation and reconstruction of storefronts.



This storefront (in Cambridge, MA) works within the frame of the masonry building.



New retail storefronts should not obscure original architectural details of the building.

New Construction

There are cases in which a building is missing in the façade of the street. This gap usually results from the removal of a building that once matched the line and shapes on the street. This break is particularly felt as one moves along the sidewalk. If new construction respects its street context, the block will be strengthened and the scale of the sidewalk experience will be restored.

The following general guidelines for new construction should be considered:

- Make new construction a product of its own time and not a copy of an older architectural style.
- Maintain the existing front wall plane of the street façade in the design of a new building.
- Maintain the cornice line of existing buildings in the design of new buildings; and consider entire blocks as a single façade – materials, colors, rhythm of elements, and common details should be recognized and incorporated into any new development.
- Newer buildings on the street that contribute little to the architectural character of the street are candidates for new awnings that will establish a more consistent street edge. In this way newer buildings can contribute to the general quality of the street by being unobtrusive background to noteworthy landmark buildings.

The following detailed guidelines were drawn from the Secretary of the Interior's "Standards for Historic Preservation Projects" and other sources containing considerations and procedures applicable to the maintenance and restoration of all commercial buildings, as well as historically significant buildings.



Many newer buildings ignore the street edge by locating parking areas in front.



Newer buildings can be made into good neighbors with awnings or attractive signage.

CASE STUDY : Renovation and Reconstruction



Alterations to historic buildings have often failed to respect the original proportions or details. Reconstructions of storefronts should be carried out to re-establish the mercantile traditions of Cabot Street with either the restored shopfront, derived from historical archives, or a restoration of a more typical condition found elsewhere in the district.

Match tenant signage with colors more sympathetic to the building (avoid bright white backgrounds on colored buildings)

Remove horizontally proportioned windows that do not align with windows below

Avoid square windows or windows that have no relationship to existing windows found on the building

Install awning to re-introduce pedestrian scale and weather protection within the downtown

Where possible, reintroduce larger glazing that is more traditional in a retail district.

Coordinate color scheme of retail ground floor with building colors



STRUCTURAL SYSTEMS

The structural stability of the building is of primary importance in any repair or renovation project. The following is a list of general principles to consider whenever changes are to be made:

- Before cosmetic alterations are begun, all structural problems should be corrected. Realizing the special problems inherent with older buildings, visible signs such as deflection, cracking and obvious failure should be investigated thoroughly. Failure to treat problems such as these will cause continuing deterioration and possibly shorten the life of the building.
- Whenever possible, structural repairs should match the original system. In the event that economic reasons or expected future use of a building dictates change of partial modification of the structural system, this should be executed in a way respectful of a building's appearance and scale.
- Any and all changes to a building's interior or exterior should first and foremost consider the structural stability of the building.
- Structural work should be undertaken by bonded contractors with extensive experience in the specific system requiring repair or renovation.

In the case of Downtown Beverly, most of the larger structures are of masonry construction, although there are many examples of wood-frame structures that are now in commercial use. The following general rules and guidelines suggest to tenants and owners structural issues to evaluate when maintaining or renovating a building. (The structural condition of a building is one area which should be analyzed by a knowledgeable architect, engineer or building contractor.)

Wood-Frame Construction

Wood buildings are the easiest to maintain. Correction of defective components involves their repair, replacement or duplication. The most common problems are the deterioration of the structural frame and other wooden members, as well as moisture penetration in the walls. Wood-frame buildings should be checked periodically for structural defects.

Special attention should be given to the basement/foundation area where rotting sills or wooden piers might cause extensive damage throughout the rest of the building. Periodic checks for rotting or insect infestation should be made by a tenant or owner. Whenever defective pieces are identified,



A well maintained wood frame building on Cabot Street.

they should be removed and replaced with a new piece of similar dimension. If only a section has been affected and a significant part of the piece can be salvaged, the rotted section should be cut out at least twelve (12) inches beyond the damaged area and repaired. Complex trim details can be reconstructed through the use of stock pieces of trim and blocking.

Brick and Masonry Construction

Brick and stone masonry are the most common building materials used in commercial structures. Maintenance consists mainly of cleaning, periodic re-pointing and, on rare occasions, the replacement of sections of brick walls, supporting piers, or columns where there is extensive deterioration.

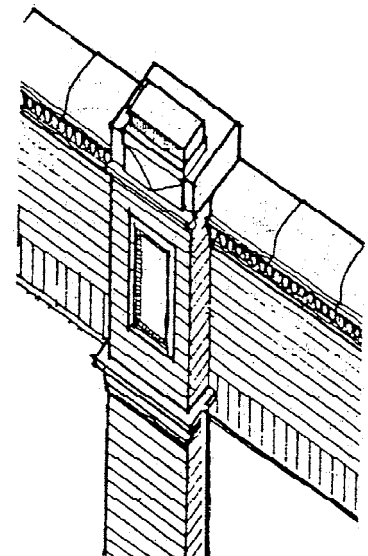
Water is most responsible for the breakdown of masonry in buildings. Disintegration of both the masonry and mortar bond is often caused by water penetration followed by successive periods of freezing and thawing or wet and dry cycles. Water also acts as a catalytic agent promoting deterioration, as harmful chemical compounds from the environment or found within the masonry itself are dissolved. Subsequently, these corrosive solutions saturate the masonry units and cause damage. A preventative operation is to maintain gutters and downspouts to keep excessive water from masonry walls.

The following list of rules and guidelines should be adhered to when masonry repair, maintenance or replacement is being considered:

- The cleaning of masonry is most necessary when deterioration has been observed and stabilization is desired. The gentlest method possible should be selected to insure the integrity of the brick and mortar joints. Various options include; low-pressure water along with soft natural bristle brushes, mild detergents, diluted acids or steam cleaning. Before cleaning is initiated, test areas should be selected to determine possible discoloration or other detrimental side effects.
- Abrasive cleaning, either mechanical such as sandblasting or strong chemical solutions are not recommended. Both promote the loss of the hard outer surface formed by firing. Erosion of this skin exposes a soft inner core, which is more susceptible to further deterioration of the brick.
- Mortar should be re-pointed only when moisture problems have been detected or in the event that sufficient mortar has chipped away, allowing water to stand in the mortar joint.
- Re-pointing consists of removing the deteriorated outer layer of mortar and resealing the joint with the proper type of new mortar.



A fine example of brick and stone construction on Cabot Street.



Typical masonry details such as these should not be covered with new construction, awnings, or signs.

- When duplicating mortar, joint size, profile, as well as composition, color and texture should be maintained for a consistent wall appearance. In general, grey tones of mortar are preferred to highlight the richness of the brick. Use of black mortar, however, should be avoided.
- Masonry mortar must be used and not Portland cement mortar, which becomes too hard.
- Whenever possible, original masonry and mortar should be retained without applying any surface treatment.
- It is common for brick to be painted. In most cases, it would be impossible to return painted brick to its natural color. Previously painted brick should be repainted in colors that complement other façade improvements and the surrounding streetscape. Painting of brick should be avoided except in the most extreme cases of deteriorating brick.
- In those cases where deteriorated stucco requires repair, a mixture that duplicates the original as closely as possible in appearance and texture should be selected.
- New brick construction should avoid the use of “rusticated” bricks, either by mixing in highly contrasting colors or textures of brick into a wall to create an aged look.

Moisture Protection

Moisture penetration usually occurs through the basement floor and foundation walls, through improperly flashed exterior joints and through a leaking roof. These conditions should be patched and repaired. Additionally, moisture in the ground naturally seeks the warmer, dryer conditions of most basements. Although moisture penetration through the basement floor and foundation walls is unavoidable, it can be controlled. For example, providing adequate ventilation in a basement and allowing twelve to eighteen inches between wooded construction and the ground will facilitate evaporation and control moisture condensation in the building. Another possible solution to moisture penetration is to repair, maintain or install drains around the exterior foundation and in the basement to remove excessive ground water.

BUILDING ELEMENTS

In order to facilitate substantial input on the part of individual merchants or building owners, the following section describes various areas where attention should be focused when formulating appropriate renovating designs. Once again, this is not meant to be an all-inclusive list. Rather, it is intended to encourage more critical observation and evaluation of details, which define the overall quality of the built environment.

Roofs and Roofing

Roofs protect the building from the elements and water damage. Leaks often do not show until substantial damage has already occurred. Most roofing will last about twenty years, but it should be checked periodically for damage, holes and cracks. Most commercial structures have flat roofs that are not visible from the street. These are usually built up roofs or hot tar, asphalt paper, and crushed stone.

Some commercial conversions may still have their original shingle, sheet metal, or slate roofs. Current costs and building practices make the application of these materials prohibitive. In many cases, it is not necessary to replace the entire roof. Rather, individual pieces and areas can be patched or replaced. In roofs that are visible, patching should match the existing materials; when reroofing, the appearance of the entire roof area and the colors and materials of the façade should be taken into consideration when materials and colors are being selected.

Where roofs are visible, care should be taken in selecting colors that will not compete with façade colors, where attention is best placed. Dark neutral colors are advisable as they will complement a variety of color schemes on the buildings that may be painted several times during the life of the roof. Gray tones can also look, to the casual eye, like slates found on many older buildings.

Building Equipment/Mechanical Systems

During façade improvement and renovation, some attention should be paid to removing mechanical equipment that detracts from the appearance of the building.

Air conditioning units protruding from windows and supported by brackets obscure attractive facades. They are also noisy, and have a tendency to drip on pedestrians and customers passing below. Air conditioning units should be placed on rear and side facades when possible. If the addition of an air conditioner unit to the street façade is unavoidable, it should be mounted

flush with the exterior wall. A drain should be installed to properly carry condensed water away from the unit to the ground. Existing units can be covered by awnings to reduce their visibility while maintaining adequate ventilation.

Mechanical ventilation systems, installed for commercial kitchens frequently appear in visible locations. Such ducts and piping should not be allowed in public ways or facing residential areas. Owners should locate ducts within light wells or along walls that are primarily viewed from other commercial structures.

Rooftop mechanical equipment should be placed beneath the parapet line as seen from the furthest sidewalk of the adjacent public way, or must be screened and painted with a color that blends with the roofscape.

New mechanical systems or additional mechanical services should be installed in areas and spaces requiring the least possible alteration to the plan and appearance of the building. Mechanical systems should be sensitively installed in order to preserve important interior and exterior architectural features.

For reasons of energy conservation, thermal insulation should be installed in attics, unheated cellars, and crawlspaces.



Mechanical ducts and exhaust systems should not be located on public ways.

Architectural Details

Most commercial facades have some decorative architectural details. Some occur over the entire length of the block establishing an architectural continuity. This continuity is defined by a uniform molding or coping line, decorative details or by columns and piers, which give rhythm and scale to the storefront of a building. Some of these architectural details have been covered with false roof fronts or large sign panels. Such additions destroy the architectural continuity of the building and detract from the quality of the streetscape. Details and ornamentation are a vital part of the commercial area's visual character and should not be destroyed during renovation.

Architectural details of the building frame should be retained and enhanced during façade renovations. New storefronts and signs should not cover significant building detailing. If a detail cannot be maintained or repaired in its original form, it can be modified or simplified to match the original in size and appearance without disturbing the character of the building and storefront.

When architectural details, whether they are made from wood or metal, require cleaning, care must be taken to select a method of cleaning that will prevent deterioration leading to structural failure. While cast iron and steel

CASE STUDY : Mechanical Systems and Signage

Buildings of high quality can suffer from collective additions and alterations. Partial painting, uncoordinated signage and installation of mechanical systems diminish the architectural merits of this fine building.



Remove mechanical systems that are located in full view of the public street. Mechanical systems should be located behind the building facing other retail uses

Signage has been placed over the brick facade rather than within the signage band below

Building has been painted on the lower level which diminishes its architectural features such as the arched central entrance.



Awning shape fails to complement the building architecture

Coordinate color scheme of retail ground floor with building colors

Air conditioner could have been placed under a canopy or awning

Encourage projecting signs to create pedestrian scale

are usually not affected by mechanical cleaning methods, metals such as pressed tin, zinc, and aluminum are and should be cleaned by the most gentle method possible.

It is not recommended that architectural features essential to the building's character and appearance be removed during the course of façade improvement. Such details illustrate the continuity of growth and change. Nor is it recommended that renovations be initiated which call for exposing wood or metal that was intended to be protected from the environment.

Do not use cleaning methods that alter the color or texture of the metal detail.

Sandblasting or other abrasive cleaning methods should not be used as a method for removing paint from wooden architectural details.

Where distinctive architectural details do require extensive repair or replacement, new material and its application should duplicate the old as closely as possible.

Where cornices are still in place, they should be repaired and retained. Cornices are one of the chief design elements of downtown buildings, especially of the Victorian Era, and should be protected. Where cornices have been removed, reconstruction is possible in wood materials if not the original masonry. Preserve the original height and proportions of the cornice even if details cannot be fully recreated. Avoid materials that are clearly not contemporary with the original building.

Siding

Although relatively few in number, non-masonry commercial buildings in Beverly have either wooden clapboards or shingles for an exterior surface. When repairing or replacing either, the following should be considered:

Clapboards – Wooden clapboards are the standard building materials for most non-masonry commercial structures. Resurfacing these buildings with other materials will usually not be as attractive as the repair and maintenance of the original material. New materials must match the details of the original materials in the width of the siding, the width and depth of trim at corners, and in the general application.

Shingles – Wooden shingles left to weather, or periodically painted or stained, are one of the most maintenance-free materials available. As with other siding materials, repairs and renovations should respect the original detailing – corner boards, trim at openings, or the beveled corner. Shingled buildings often have varied appearance of patterns and textures.



A fine example of preservation and re-use of this firehouse on Rantoul Street.



A good example of clapboard siding used in the retail zone to match the building above.

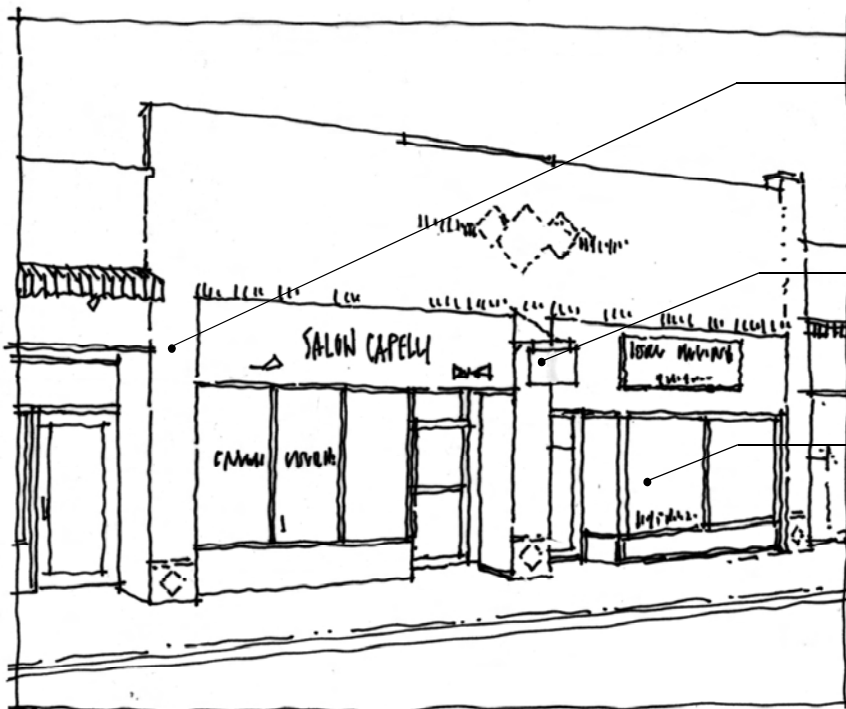
CASE STUDY : Multi tenant retail

Most commercial facades have some decorative architectural details. Some occur over the entire length of the block establishing an architectural continuity. This continuity is defined by a uniform molding or coping line, decorative details or by columns and piers, which give rhythm and scale to the storefront of a building. Often these architectural details have been covered with false walls, roof fronts or large sign panels. Such additions destroy the architectural continuity of the building and detract from the quality of the streetscape.



Wood paneling has been placed over brick columns. If the brick facing remains, it should be revealed to the benefit of the facade.

New shopfront windows are too small and out of character with the neighboring shops



Reveal and refinish brick pilasters so that the frame of the original building is visible.

Add projecting signs to create visual interest for pedestrians

Redesign storefront windows that are larger and more consistent with adjacent stores.

This must be maintained when renovating a business. Asphalt singles for wall surfaces are not advised. Asbestos shingles should not be used under any circumstances, as well as be removed when at all possible.

Inappropriate Building Materials

A successful façade improvement program will result in a clear and cohesive commercial district where building faces complement one another. Some materials that are commonly used to obscure original materials and building details that should not be used within the downtown include:

- Aluminum siding
- Vinyl siding
- Asphalt shingles
- Artificial stone materials (brand names such as “permastone etc..)
- Unpainted or exposed concrete block on street facades
- Wire glass, tinted glazing, or film
- Plastic glazing materials
- Stucco, GFRC (Glass Fiber Reinforced Concrete), or other synthetic materials on primary facades.
- Backlit plastic awnings used as signs
- “Rusticated” brick that features sharply contrasting colors of brick in random patterns to appear old or historic



Several materials not recommended are shown here: rustic shingles and brick.



The application of artificial stone on this building fails to lend it much distinction.

Windows, Doors, and Entrances

When faced with decisions about doors and windows, merchants and owners should consider both their own building and the overall framework of openings that have been established along the street.

The windows of retail stores vary in size and shape depending on the nature of the business as well as the architectural style. For example, large plate glass windows are indigenous to stores and small mullioned windows are characteristic of taverns.

When designing new window treatments, it is important to relate the proposed design to the façade of the whole block. Colonial windows with small frames, however attractive, can disrupt the continuity of a block façade, which is entirely composed of large plate glass windows.

When choosing replacement window frames, pay special attention to their color and finish. Select colored trims to work with the building details. Dark finishes (black, bronze, grey, brown) should be used with brick and dark materials; shiny finishes should be used with tile and glossy materials. Either color frame can be used with concrete buildings.

Pay attention to the size of the replacement windows; stock sizes are not appropriate for renovation if they do not match the original sizes and shapes of the building. Blocking down or filling-in of older openings to fit standard size sashes is not recommended.

Storm or insulating windows that cover and protect important historic elements such as carved or paneled doors, antique or art glass should be installed in such a way as to cause minimal intrusion or obstruction. It is advisable to match the color of the storm window to the color of the inner window and the trim if possible.

After structural repairs are completed, the material, design, and hardware of older window sash and doors should be retained whenever possible.

It is not advisable or desirable to introduce shutters to buildings unless there is evidence of their one-time use. Few late 19th century commercial buildings used shutters in any case. If shutters are to be installed they should be sized to provide real coverage of the window to avoid looking artificial or “cute”.

During remodeling, doors should be selected to harmonize with the building façade. Avoid conflicts in style. For example, a “colonial” door should not be added to a twentieth century masonry building.

During façade renovations, original “storefront” doors should be retained through repair and refinishing. Replacement doors, like window frames, should be chosen to work with the color of building materials. Dark finishes (black, bronze, grey, brown) should be coordinated with brick and dark materials, brighter finishes with tile and glossy materials, and either finish with concrete buildings.

New doorways should be in a recessed entrance way. This forms a protected area for customers between inside and outside. It also adds interest to the street and allows more viewing of display windows. This long established pattern should be applied to new buildings as well as renovations.

In historic or eligible buildings having steps or sets of steps at the entrance, renovations should retain the historic steps where possible. ADA requirements for universal accessibility can often be satisfied with alternative entrance locations in historic or eligible buildings. Many stores have side or rear access doors leading directly from parking areas with handicapped parking. If these entrances can be made accessible with equivalent access to the establishment, and modifications to the historic steps at the entrance of a structure can be avoided.



There is no relationship between this retail facade and the building above it, nor does the choice of materials or windows resemble any historic period in Beverly.



The use of shutters on this waterfront building is scarcely believable or necessary.

Glazing

Glazing materials for storefront renovations must be chosen according to the use contemplated for the shop. Display windows are appropriate for general merchandizing, a smaller area of glazing is appropriate for professional offices and service establishments, and even smaller windows for taverns.

Wire glass, textured glass, and plastic glazing materials are inappropriate for commercial storefronts. Plate glass and safety glass are acceptable in all locations. Stained glass is acceptable for certain locations such as in transoms, as part of a larger window, or in taverns. Sun control, tinted (smoked) glazing is not acceptable for storefront windows. Roll-down, interior sunshades are encouraged. Store owners should use awnings and canopies to protect window items from the effects of the sun. New low-e glazing products can be installed that are clear and provide significant sun and heat gain benefits. Polished or mirrored glass should not be used in either new buildings or renovations.

Facade Lighting

Store facades do not need separate lighting. Significant structures should be designated for special lighting treatment as part of a coordinated downtown lighting plan. At night, display windows should be lit from within to make the merchandise display a form of store advertising and add light and interest to the sidewalk. Any façade lighting should be restricted to the building sign, the light that comes from street fixtures, and internal display and window lighting.

Signs

Signs are one of the most prominent elements on the street and are often a customer's first introduction to a store. If well designed, signs add interest and variety to a building's façade while enlivening the street scene. But if poorly designed, they can confuse customers and detract from even the most attractive storefront. The most compelling and legible signs are most often not the largest or brightest or the most clever. In a cluttered urban environment, restraint can often be a more effective way of capturing attention.

The City of Beverly has recently revised the sign regulations to spell out the requirements for any sign, which is new, reconstructed, or replacing an older one. Further guidelines are advisable within the study area in order to ensure an overall high quality shopping environment within the downtown. Roadway signs, billboards and automobile oriented (and scaled) signs within the downtown detract from the pedestrian environment. In addition



Enforcement of current sign regulations would do much to improve this facade.

to the city sign ordinance, the following guidelines should be considered when undertaking commercial improvements within the downtown.

- Signs should fit within the lines and panels of the storefront as defined by the building frame and architectural detailing. Signs should be placed where it respects an existing sign line established by the signs on adjacent stores in the same block.
- Signs should work with the materials of the façade. They should be maintained easily and capable of withstanding climatic variations. Painted wood or metal is the preferred background, and letters may be painted, carved into wood, or individually mounted. Plastic may be used if it is carefully designed and is fabricated with another finish.
- Mass-produced plastic signs convey a powerful corporate image and are inappropriate to the scale and quality of the downtown and its shopping streets.
- Projecting signs should be encouraged to provide pedestrian scale elements within the street. Projecting signs that are less than 7 square feet, project less than 4 feet from the building face, and are installed below 15 feet should be encouraged.
- Indirect light should be used to illuminate signs, and to draw attention to the surrounding façade. Use incandescent rather than fluorescent light sources for a truer color rendition.
- Colors should be limited in number and should complement the colors used in the rest of the façade. Avoid glossy backgrounds as they reflect glare and reduce legibility. Signs directed toward pedestrians can make use of subtle color relationships, shading, outlining, and decorative borders. Bright white backgrounds should be avoided, particularly if lettering features cover little of it, leaving an appearance of a void without color or detail.
- Illuminated signs must be turned off between 11:00 PM and 7:00 AM. Except for businesses that stay open later, in which case lighted signs must be extinguished upon closing.
- Outdoor advertising signs (billboards) which advertise products not offered on-site are not permitted within Beverly. Removal of existing, grandfathered billboards should be pursued with incentives and through negotiations with owners during the design review process.
- Graphic images and three-dimensional symbols should be considered as good substitutes for written signs.



Two examples of good projecting signs (and storefronts) that improve the street .



Projecting signs can be scaled with plenty of detail for the pedestrian.

Window Displays

Window displays are an important part of the overall visual appearance of shops and storefronts. An interesting display of merchandise, arranged to be seen by passing pedestrians, in addition to providing an open view to the store itself, can act as its own advertisement.

Displays can be organized by using large items of merchandise or through a system of shelves and display boxes for similar items. Residential details (drapes or curtains) are inappropriate for commercial use, and more businesslike elements (shutters or blinds) should be used.

Other information such as store hours, acceptable credit cards, parking information, etc., should be clearly organized in one area near the store entrance. Likewise, an unorganized display of temporary paper signs can give the impression of impermanence when simply attached to the inside of a store window. Special sale announcements should be displayed in a balanced way and should be removed when the sale is over. Temporary sale signage should be limited to two weeks per year if it covers more than 20% of the window area. Temporary posters announcing community events and organizations should be arranged neatly in one area and removed when scheduled activities have taken place.

Awnings and Canopies

Awnings and canopies have been traditionally used in retail areas to give protection from the weather, as well as to protect window merchandise from the sun. In addition, awnings and canopies can provide color and a three-dimensional appearance to a façade. Printed with the name and street number of the store and properly designed and maintained, they can add to the character of the street and commercial area and enhance the pedestrian scale of the street and sidewalk.

Heavy canvas is encouraged for awnings and canopies, and should be replaced when weathered, faded, or damaged. Appropriately designed metal and glass awnings can provide a more durable alternative, and could be used in many of the commercial structures found in downtown. Internally lighted plastic awnings are not permitted within the downtown. They are sometimes used as a way to circumvent size restrictions on sign areas.

To extend their useful life, canvas awnings should be of the retractable type to avoid damage from weathering, vandalism, snow loads and other causes.



Two examples (from Cambridge, MA) of new cloth awnings well designed within store-fronts.

CASE STUDY : Awnings

Awnings and canopies have been traditionally used in retail areas to give protection from the weather, as well as to protect window merchandise from the sun. In addition, awnings and canopies can provide color and a three-dimensional appearance to a façade. Printed with the name and street number of the store and properly designed and maintained, they can add to the character of the street and commercial area and enhance the pedestrian scale of the street and sidewalk. Internally lighted plastic awnings should not be permitted within the downtown, particularly if they are used as substitute signs to circumvent size restrictions on sign areas.

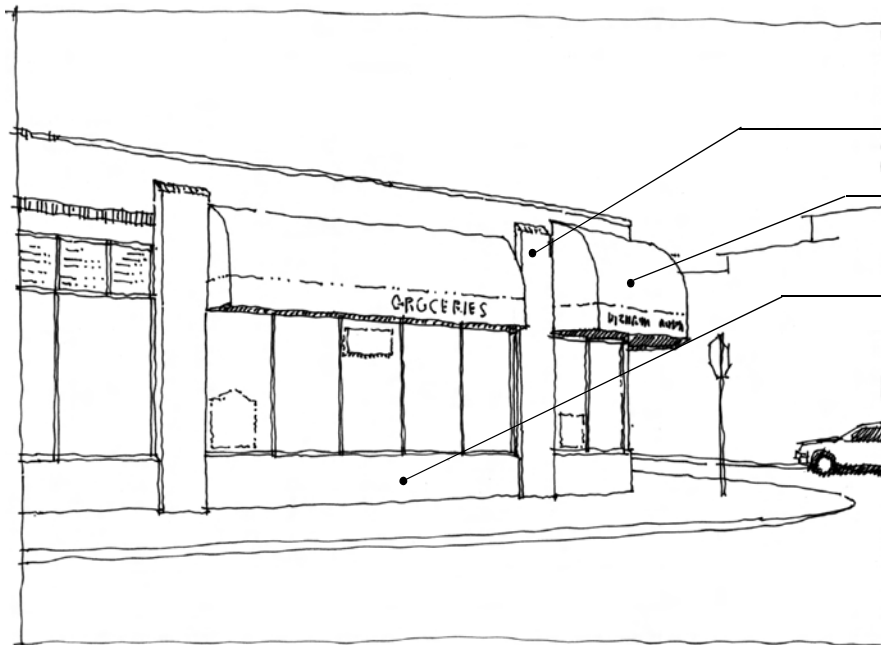


Plastic materials should not be allowed for awnings

Awnings should not cover important architectural details such as the vertical pilasters of a building

The colors used for awnings should be given the same consideration as those for any building. Bright colors should not be used in large areas but rather reserved for details.

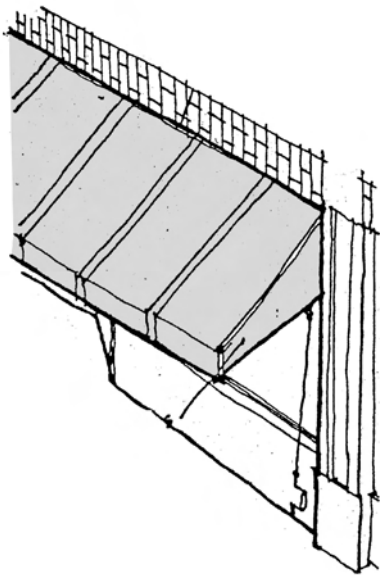
Window 'displays' cover far more than the 20% allowed.



Reveal brick pilasters

Reduce the size of awning to avoid overwhelming the building

Repaint fascia with more muted colors



Awnings should be set within the building frames.



Retractable cloth awnings can allow for open air dining with weather protection. (Cambridge, MA)

Free standing canopies used by gas stations to cover fuel pumps are increasingly large, overly lighted and often designed to display corporate colors and signs. Gas stations canopies should be set back from the street by at least 40' within the study area to avoid competing with surrounding architecture. Lighting should be designed to avoid spilling into adjacent residential areas. Canopies should not be used to display corporate colors or they will be considered as part of the allowable sign area.

Street Numbers

Street numbers for entrance doors are a small and inexpensive detail that must be included in any façade improvement. At the least, the street address should be located on the main entrance door. Numbers should be in a simple, legible style and can either be painted on or adhered directly on the glass. Fancy styles or script numbering should not be used.

Color

One of the most important decisions a building owner can make is the choice of exterior colors. Choosing of colors is often viewed as a personal choice, however, a good color scheme should take into account the surrounding neighborhood so that both the building and the street benefit. Respect for existing materials nearby and within the downtown such as brick, should guide the selection of colors that are compatible with these enduring materials.

On masonry structures, that have not been painted, the predominant color choices are for accents such as inset wood wall panels, trim, doors and windows. These can have a decisive influence on the character of the exterior and should be chosen to complement the tone of the brick.

For wood frame buildings, the choice of the wall color should be made first with the trim shades selected to match. Accents of contrasting, or complementary colors can then be used to highlight specific architectural details and as an element of interest on a façade.

Some general guidelines for use of color are listed here:

- Do not use too many colors. Little is gained from using more than 2 painted colors on a brick building and 3 on a wood frame building.
- Avoid using strong or loud colors, especially those with no tradition of local usage.
- Many of the buildings within the downtown (those viewed as

“historic” were built during the Victorian Era, (late 1800’s and early 1900’s). Original paint schemes for these buildings tended towards earth tones including browns, soft greens and beiges.

- Color work on the side and rear walls should avoid harsh contrasts with the front façade. A building should be treated on all sides as consistently as possible, particularly if constructed of the same materials.
- For clapboard buildings the use of muted or natural colors is recommended. Colors such as gull gray, gray-blue, yellow ochre and soft reds are appropriate for such buildings. Brighter colors such as brilliant greens, yellows, purples or pinks are rarely appropriate for northern climates and tend to stand out as a foreign object amongst more traditional colors.

Color schemes should be chosen to present the building as a unified façade. Care should be exercised to coordinate the colors of upper stories with the street level storefront. Color schemes that harmonize with masonry, the predominant material in the commercial area, should be used.

Landscaping and Site Work

Landscape site elements such as, paving, curbing, fencing, etc. can contribute significantly to the visual quality of a retail district.

In the downtown study area, in addition to all other zoning requirements, parking stalls in parking lots should be set back from the street lot line or the back of sidewalk, to avoid the probability of cars backing or otherwise maneuvering on the sidewalk upon entering or leaving the stalls. Such setback area shall be landscaped and maintained to provide an attractive appearance.

Driveways within the downtown study area, should be limited to a maximum of 25 feet wide. Businesses requiring drive-through operations may occasionally need two driveways, but few parking lots require multiple driveways and these tend to reduce the number of valuable on-street parking spaces within the downtown. Multiple driveways should be discouraged within the study area

Gas stations (and drive-up banks) pose a special challenge to the qualities of a downtown. Service station canopies and pumps should be sufficiently set back from the street. The site should be screened from both residential neighbors with fencing to block headlights, and the sidewalk should be protected with sufficient landscape treatments, and curbing to prevent cars from driving into the sidewalk zone.



Unscreened parking areas and long curb-cuts jeopardize pedestrian safety and comfort .

CASE STUDY : Stie landscape

Existing automobile oriented businesses on Rantoul and Cabot Streets can be enhanced to reduce their negative impacts. Changes in ownership, or use, are the best opportunities to request reductions in signage area, increases in landscape, and protection for residential neighbors.



Remove unused signage from previous tenants and reduce size of signs to currently allowable under sign ordinance

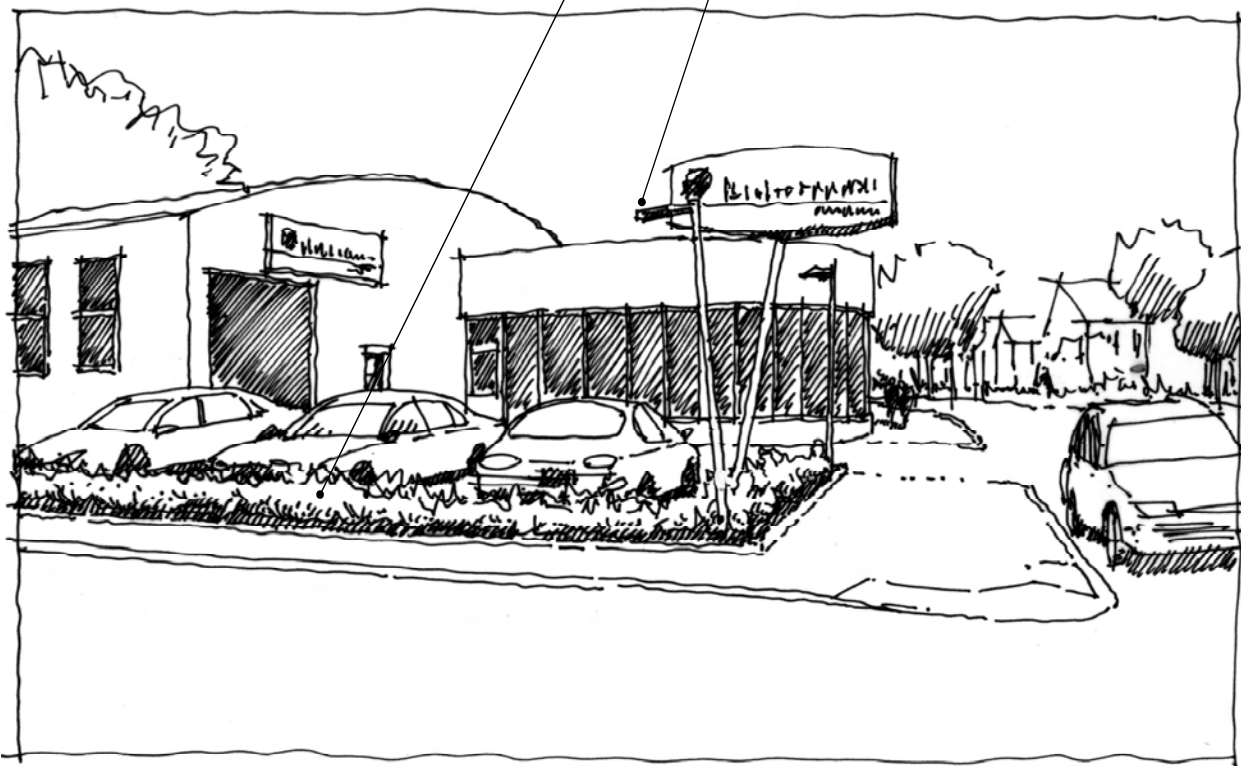
Determine that site lighting does not shine onto residential properties (require cutoff fixtures)

Add curbing around parking areas except at driveways (enforce max. driveway widths)

Set-back parking at least five feet from property line

Install and maintain planting areas that provide visual screening of parking areas

Install cut-off fixtures to reduce glare on adjacent properties



Concrete and asphalt are the most common paving materials used in parking lots. Although they are suitable for many conditions, large uninterrupted areas of these materials should be avoided when possible. Traditional paving materials such as brick or granite pavers offer rich textures and natural tones, which blend well with the commercial environment. These traditional materials should be used whenever possible, although new materials such as precast concrete pavers can be an appropriate compromise. In areas of slow traffic and minimal slopes, crushed stone may be used for parking areas to increase rainwater retention and reduce storm water runoff. Asphalt parking surfaces should be discouraged within 20 feet of major streets such as Cabot or Rantoul Streets, where special paving surfaces should be employed as transition between driveways and parking areas.

Walls and fences have always been important streetscape elements. Large paved areas for off-street parking should be visibly screened from the street with appropriate walls, fences, or planting. Natural stone or brick walls are reasonable, as are painted wood board picket fences. Unless they can be concealed by planting, concrete block walls, chain link fences, and natural wood board or split rail fences should be avoided wherever possible.

Trees, shrubs, flowers, and grass have a strong visual impact upon a building. Planting can offer shade and/or privacy, while adding color and texture to the area. If trees or large shrubs are to be planted, they should be located with their ultimate size in mind. Planting should also be considered as building elements to be balanced and proportioned to respect the building they surround. Special opportunities for other planting also exist. Where the sidewalk is wide, or a building is set back, plant beds or boxes can be installed. Add window boxes as well. A landscape architect or nurseryman will be able to provide additional information with regard to site improvements.

Outdoor furniture is often placed by businesses in the public right of way for restaurant or cafe sales. Street activity is generally a positive quality within a retail district. Special permits are generally required for placement of objects in the public right of way such as the sidewalk. Permits for outdoor dining or outdoor sales should require minimum levels of quality for objects. Umbrellas, chairs and tables should be kept orderly and stay within the permitted areas. The use of inexpensive plastic chairs and tables is common in many locations and should not be limited unless they become damaged or are not kept sufficiently cleaned. The use of white plastic should be discouraged, in preference for darker colors.

Sources and Credits:

Sources for written materials

Adams Facade Guidelines
by Architectural Conservation Trust and Vision Inc. for the
Downtown Preservation Action Plan for the Town of Adams

Beverly Downtown Revitalization Plan, January 1979

Revitalizing Downtown by National Trust Main Street Center, 2000

Historic Building Facades by New York Landmarks Conservancy, 1997

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Appendix 1

TECHNIQUES AND SPECIFICATIONS

Foundation Moisture

The most common sources of moisture penetration are through the basement floor and foundation walls, through improperly flashed exterior joints, and through a leaking roof. Moisture in the ground naturally seeks the warmer, dryer conditions of most basements. Consequently, moisture penetration through the basement floor and the foundation walls is unavoidable. However, the degree of penetration and the level of humidity in the basement can be controlled.

Adequate ventilation in a basement will facilitate moisture evaporation, and holding wood construction twelve to eighteen inches above the surface of the ground will usually suffice to reduce and control excess condensation in a damp basement. Drainage around the exterior of the foundation walls and in the basement floor will also facilitate the removal of excessive amounts of ground water.

Almost any moisture condition can be eliminated almost completely by building a vapor barrier over the basement floor and across the foundation walls. Most nineteenth century foundations were constructed out of masonry and, in spite of continued Re-pointing, are poor barriers against penetrating ground moisture. Basement floors were usually left as bare ground and are as conducive to proper drainage as to seepage from below. An effective vapor barrier should include a layer of polyethylene sandwiched between course sand and the basement floor and covered by a thin poured concrete wall over the masonry foundation walls. The polyethylene on the walls should run down and underneath the polyethylene on the floor to guarantee a continuous vapor barrier.

Paint Problems

Blistering and peeling paint are the other common signs of an excessive moisture condition within the framework of the building. Solutions outlined above may not be absolutely necessary to correct this particular problem. Blistering and peeling are caused by inadequate ventilation, which results in condensation on the interior of a wall. Moisture is trapped by an impervious membrane, usually a thick skin of oil paint covering the exterior, which does not allow the wall to breathe and the moisture to evaporate through it. Instead, because of the interior of the building, especially in the fall, winter and spring months, is warmer than the exterior, trapped moisture condenses

between the frame of the building and the inside surface of the exterior wall covering. Dry and wet rot, and blistering and peeling paint are the typical results.

The simplest solutions to correct almost any paint problems are to adequately ventilate the exterior wall surface with small, round metal ventilators, and to use an acrylic latex paint instead of oil. Unlike oil, which forms an impervious membrane, acrylic paint is porous and will allow the wall to breathe. The surface should be properly prepared by scraping off all loose paint and removing as much of the old paint around the problem areas as is possible before priming and repainting. Acrylic may be painted over oil paint but not the reverse.

Structural Deterioration

Structural members infected with dry or wet rot should be removed and replaced with a new member of similar dimension. If only a section of a structural member is infected, the rotten section should be cut out to at least twelve inches beyond the rot and repaired by nailing or bolting in a new member,

Solid timber posts and beams where unexposed should be replaced with structurally superior built-up members of similar overall dimension.

Structural failures or repairs in the foundation should be remedied or carried out before proceeding with restoration work on the wood construction of the building itself. Frequently, structural failures in the frame of the building are directly related to structural problems in the foundation wall and/or the footings. Such problems should be thoroughly investigated to accurately determine the real cause.

Leaking flashings or exterior joints and leaking roofs should be repaired and replaced if necessary. These are the most common sources for water penetration through an exterior surface and may require constant inspection and maintenance. Many old buildings were built over a period of years, each new section merely abutting a previous section. Because each section was built on its own foundation, the various sections usually settled differently resulting in slight but sometimes significant gaps between the sections. Such gaps require special flashing details to properly weather seal the involved sections together. Properly aligning the section of a building to eliminate such gaps usually requires major foundation work, an undertaking that can be prohibitively expensive. Sometimes the sections can be brought together with tie rods and turn buckles.

Once the foundation has been repaired or stabilized, most structural problems in a wood frame building can be solved by reinforcing the existing

structure. Under-structured walls, floors, and roofs can be built-up with additional studs, joists and rafters of similar dimension to the originals. Spreading walls and sagging floors usually can be straightened with tie rods and turn buckles.

Siding and Details

The most important consideration to be made in the restoration of a wood frame building is the preservation of architectural details. Because wood is such an easy material to work with, many wood frame buildings, especially those in the Italianate, French Second Empire and Queen Anne styles, were encrusted with elaborate architectural details. While important to the architectural character of the building, they are more often than not removed in the process of minor or major repairs and not put back. Residing a building, usually with synthetic material, is probably the single greatest cause for removing details essential to a building's character. Because wood is easy to work with, there should be no excuse for not duplicating almost any architectural detail even if the duplicate is nothing more than a basic outline of the original minus the minor decorative elements.

Wood shingles are the most durable siding material if properly weather-proofed and maintained, but are extremely expensive. Commonly used on most wood frame Queen Anne style buildings, usually in combination with clapboards and sometimes board and batten siding, wood shingles should be replaced wherever originally used and should only be substituted for clapboards if they duplicate the horizontal spacing of the clapboards that are set in rigidly straight lines to mimic the appearance of the original clapboard siding as closely as possible. Board and batten siding, which is rare and almost exclusively limited to Gothic Revival style buildings, should be replaced wherever used originally and should not be substituted for or replaced with any other siding material.

Clapboard siding is without question the most common nineteenth century siding material. However, the availability of synthetic substitutes for wood clapboards means that the relative merits of wood, aluminum, and vinyl clapboard siding must be considered from the standpoint of expense as well as durability. It should be remembered that nothing would look better than the original siding material. No matter how carefully synthetic siding is put on, it is always going to look like a substitute for wood clapboards. Because the horizontal spacing is rigidly fixed, the spacing never lines up with existing window sills or lintels and the siding practically never ends up with full clapboard just below the cornice. The spacing on wood clapboards was always figured and adjusted so that it would line up around the windows and end up with full clapboard below the cornice.

Synthetic siding does have certain disadvantages, which should be consid-

ered. Even though synthetic siding is supposed to eliminate the need for continual repainting, the colors are sometimes not as permanent as the manufacturers claim. The choice of colors is also usually limited and, with the exception of white, may not be appropriate to the architectural style and character of the building. Synthetic siding is also generally more expensive than even several paint jobs. Aluminum siding can be easily and permanently dented and scratched. Both aluminum and vinyl cannot be painted over successfully. This means that although synthetic siding may be the end of a property owner's maintenance worries, once the color is selected it cannot be changed without replacing the siding. If a wrong color choice is made, the result will essentially be permanent.

Synthetic siding is often blamed for spoiling the character of an old building. However, it should be pointed out that it is not the material that is to blame but the way in which it is applied. Architectural details such as corner boards and the trim around the windows and entrances are removed and either is not replaced or is replaced with thin synthetic equivalents. Other details such as cornices are removed and replaced with siding. Anyone who doubts the importance of details should try shaving off their eyebrows.

Aluminum and vinyl clapboards are imitation materials and should only be used as if they were wood clapboards. They should only be applied to surfaces originally covered with wood clapboards and be cut to fit around all architectural details, even corner boards. If the synthetic siding is applied in this fashion, there is no reason why the architectural character of the building should be spoiled.

The whole range of asphalt and asbestos shingles and siding and artificial stone and brick sidings should never be used. They are not historically correct to any architectural style and only destroy a building's architectural character. Artificial stone and brick sidings are an unsuccessful pretense to be something which they are not, and devalue not only the building but the surrounding environment as well.

Brick

Large scale brick manufacturers using uniform clays to produce bricks of uniform size, color, hardness, and regularity did not come into existence until after the Civil War because of their dependence on the railroads. Before the Civil War, partly because of the bulk and weight of bricks and partly because clay and sand for making bricks were found everywhere, bricks were manufactured locally, very often right on the building site in temporary facilities.

Brick Deterioration

Soft and porous by present standards, the bricks absorb twenty to twenty-five percent of their weight in water, whereas ten percent or less was considered the accepted maximum by the end of the nineteenth century. Soft, under-burned bricks might even absorb as much as thirty-five percent of their weight in water. The absorbency factor is important to bear in mind when comparing modern bricks with old ones and when determining the causes of deterioration.

The deterioration of a brick wall can be caused in numerous ways. It was not uncommon for new brick walls to develop efflorescence. Soluble salts found in the brick and mortar, or formed by interaction between the two, reached the surface of the brick and dried. Eventually these salts were removed by natural action or by brushing and washing. Groundwater, rising by capillary action, also introduced harmful salts. As the salts became concentrated in the lower parts of the wall, the dampness rose even higher. This action sometimes caused the face of the bricks to disintegrate. Leaking roofs, gutters and parapets also can constitute a major source of water on walls. Even small cracks where mortar has failed to adhere to the brick can allow water penetration.

The outer crust of each brick is harder and denser than the material inside. Once this crust is removed by freezing and thawing, sand blasting or some other means, the disintegration of the brick is greatly increased.

Old bricks frequently develop cracks where shrinkage or laminating occurred in the clay where unequal stresses were set up during firing. The corners of the brick commonly break or wear away more than the rest of the face, giving it a rounded exterior surface. Re-pointing of the joints is the most common operation in maintaining and repairing a brick wall, but if it is improperly done, it can contribute to the deterioration of the bricks.

Once brick begins to crumble, the crumbling invariably continues and the condition cannot be stopped except by replacing the brick. A few bricks can be removed and replaced at one time without damaging the structural stability of the wall. A damp proofing course can be introduced in a wall in short length by removing a few bricks at a time and inserting a waterproof membrane into the joint before the bricks are replaced.

Old bricks are difficult to match with modern brick because of basic differences in the manufacturing process. The most practical sources for old bricks are wrecking companies that specialize in old brick, demolition projects, or from the building itself. Usually the walls of a brick building are solid masonry constructed out of the same material on the interior of the wall as on the exterior. The brick can be easily removed from the interior of the wall and replaced with any modern brick of the correct size. The only problem is that sometimes the brick used on the interior was a softer grade of brick than the facing brick used on the exterior and may not be as imper-

vious to water penetration. Besides attempting to match size, texture and color of the brick, the bonding pattern of the wall should be matched exactly. Any special architectural details should also be matched exactly.

Terra Cotta

Terra cotta is related to brick but the clay and sand used are much finer in texture than those used in the manufacture of brick and consequently produce a much harder and smoother product. Terra cotta was commonly used in the Queen Anne period and in some twentieth century architectural styles for architectural detailing, but is almost impossible to replace with new. Because of its finer quality and greater density, terra cotta generally is structurally superior to brick and is not as susceptible to deterioration. If properly maintained along with the rest of the brick wall, terra cotta should never have to be replaced.

Stone

Stone was generally used throughout Massachusetts for foundations and for architectural trim in brick buildings, and in certain areas, for entire buildings.

Besides structural failures, the other most common problem with stone is the deterioration of the stone itself. In areas where the atmosphere is polluted, this condition can be severe.

Every kind of stone is more or less porous and absorbs moisture from a damp atmosphere, from rain, from groundwater, and from condensation on the interior of the building. If there are soluble salts within the stone, or if some are introduced by moisture carried upward from the ground through the wall by capillary action, they may be carried toward the face of the wall. If these salts crystallize within the pores of the stone, the action may cause the surface to break off, and if they are carried to the surface and then crystallize on it, unsightly efflorescence is formed.

All rainwater contains some dissolved carbon dioxide, which becomes deposited on the exterior wall surface. Dirty surfaces, in turn, attract more moisture thus making them particularly vulnerable to disintegration. Water penetrates joints and cracks and can cause serious damage by freezing.

Foundations

Foundations are usually of either coursed or uncoursed fieldstone with more regularly cut blocks above grade. The stone used above grade can usually be matched easily from a local quarry or by locating an old building that is scheduled for demolition and salvaging the stone from it. Most

repair work to foundations below grade can be done with reinforced concrete, either in the form of patchwork or buttresses. Replacement walls in reinforced concrete should be kept below grade, the original above grade stonework being saved and replaced or matched with new stone.

Trim

Matching the stone of decorative architectural trim may prove to be difficult and every effort should be made to preserve and restore as much of the original sills, lintels, carved surfaces, moldings, door and window trim, and cornices as is reasonable. While replacement stone for walls should be unnecessary, matching replacement stone for deteriorated pieces of trim can usually be purchased from an active local quarry or scrounged from a defunct one, very often the one from which the original stone was quarried.

Repairs

Various cement-based materials or epoxy mixed with pulverized stone may often be used for repairs. It may be necessary to experiment with various mixtures before a suitable repair medium is developed. Such materials, particularly epoxy based, can be used to repair carved profiles and moldings. For patching stone, these materials can be mixed into a grout, which, when scribed into the face of the patched stone, often can match the repair to the surrounding original stone areas.

Repair and Replacement of Masonry

Stone and brick surfaces on old buildings have been subjected to years of expansion and contraction caused by weather cycles, and in many cases, excessive water penetration. Structural failures in masonry construction are manifested by cracking, uneven settlement, bulging, deterioration of the mortar, and other visible signs. Such failures usually are remedied by stabilizing the foundation of the building before proceeding with above grade restoration.

Frequently, it is impossible to obtain stone or brick of identical or similar color for repair work. Even if the color of the stone or brick cannot be duplicated exactly, if the type of stone or the texture and size of the brick, the width of the mortar joint, the color of the mortar, and the type of joint are matched exactly against the original, the repair work will be the most successful and visually as unobtrusive as is possible. Original masonry should, wherever feasible, be cleaned, repaired, and re-pointed rather than re-faced.

Exterior masonry walls should never be covered, under any circumstances, with synthetic brick or stone, clapboards, asphalt shingles, or aluminum

siding. This is not for esthetic reasons only. No matter what the salesman of artificial siding may say to the contrary, a masonry wall is generally one of the best bargains in terms of maintenance. It may cost as much to clean, repair, and re-point as to cover it over, but the end result will last at least three times as long.

Molded bricks for special pattern work, recessed panels, belt courses, corbelled cornices, and other architectural details; tapered and wedge shaped bricks for arches; decoratively carved stones; and other architectural terra cotta are almost impossible to replace with an exact or even close match. Consequently, every effort should be made to preserve these irreplaceable components.

The best technical source book on masonry is:

Harley McKee; Introduction to Early American Masonry, Stone, Brick, Mortar, and Plaster; The National Trust for Historic Preservation, 740-748 Jackson Place N.W., Washington, DC 20006; Washington, DC; 1973.

Cleaning Masonry Surfaces

Encrusted dirt and carbon deposits can be removed from brick walls by careful steam cleaning. This requires the cautious use of trisodium phosphate in a mils solution, which is thoroughly scrubbed onto the surface of the wall and then removed by steam jets. If the dirt and deposits on brick surfaces prove resistant to this technique, then mild solutions of hydrochloric acid may be used. A solution of hydrofluoric acid is equally effective, but window glass and painted areas must be adequately masked and metal components protected to prevent the acid from etching those surfaces. After the use of any acid solution, it is extremely important that it be removed completely by thoroughly washing the treated surfaces with a steam nozzle.

Stone may be properly cleaned with water pressure containing an aggregate of 30 to 40 mesh that contains no free silica. If this material is not obtainable, silica sand of 50 to 60 mesh may be used. Water should be mixed with the sand or aggregate with a maximum air pressure of 60 pounds. The cushioning action of the water and aggregate will allow the cleaning of the stone face without marring its finish.

An alternate method of cleaning stone is the use of a high-pressure water hose without adding the aggregate. After the stone has been soaked with water for at least three to four hours, water is then applied at a pressure of 1,000 to 1,000 pounds through an aerating nozzle, which reduces the destructive force of the water. The cleanness obtained by this method is not as great but it will clean the surface of the stone to a reasonable degree.

Because of the technical equipment and knowledge required for these cleaning procedures, owners are encouraged to consult with reputable professionals before undertaking any work. In recent years, great advancements in the use of chemical cleaners for stone have been made.

Removing Paint from Masonry Surfaces

Removing paint from masonry surfaces poses a particularly difficult problem in that the majority of masonry structures erected before the Civil War were constructed out of soft brick. Those that have been painted usually have been painted over several times which has resulted in heavy paint encrustations that are thick and often difficult to remove except by sandblasting. Sandblasting however, destroys the original texture and surface of these soft bricks, rendering them unattractive in appearance, and accelerated deterioration from moisture absorption. Sandblasting, therefore, is not recommended and should only be used as a last resort.

Where masonry surfaces are coated with oil-based paints, an industrial paint remover may be used. This is generally applied by hand and allowed to partially dry, resulting in a curling action in the paint. The loosened paint is then abraded with a stiff brush and removed with a steam nozzle. It may be necessary to repeat this action several times depending upon the number of layers of paint. Again, at the end of this process it is necessary to steam the wall thoroughly and to rinse with water to rid the surface of all residue of paint remover.

A greater problem exists where casein paints have been used as a wall coating. These are relatively insoluble by standard paint removers. Soaking the wall with water over a period of several hours, followed by a thorough scrubbing of the wall surfaces, will help loosen the casein coating. A high-pressure water hose, using approximately 1,000 pounds of water pressure projected through an aerated nozzle may then be used to remove the softened coating. Very stubborn coatings may be removed by using a one percent hydroxide solution, but this is a rather dangerous method.

Recent developments in industrial paint strippers offer possibilities for efficient methods of paint removal. Used primarily for removing large areas of paint such as found on industrial tanks, these strippers can be sprayed on with proper equipment and the residue washed off with high-pressure water hoses. A particularly promising technique is the application of paint stripper with a special steam unit that increases the effectiveness of the remover. Technical details on these products may be explored further by contacting industrial products chemical firms.

In many cases it is not necessary it is not necessary to completely remove all old paint. Instead only loosened and flaking paint need be removed. This

can be done by hand scraping and is highly recommended.

Weatherproofing Masonry Surfaces

Of great importance in a rehabilitation project in which the masonry wall is constructed out of soft brick is the final step of waterproofing the repaired wall. In recent years, the development of silicone solutions has proved invaluable for many waterproofing purposes. Silicone solutions form a chemical bond with the wall material and protect it from moisture absorption and carbon deposits. Colorless and usually undetectable to the eye, silicone application should only be undertaken after the building has been cleaned and repaired and only under the supervision of a waterproofing expert. The preservation effects of silicone will last only for several years after which time the process must be repeated.

Painting, on the other hand, is more permanent and provides some measure of waterproofing to masonry walls. Painting, however, introduces the problem of the color scheme and proper color selection. Because improper color selection can change the architectural character of a building and because paint usually does not bond effectively to a masonry surface and will eventually blister and peel, painting masonry surfaces is not recommended or encouraged except for buildings which have been previously painted.

Effective treatment of previously painted groups of buildings designed as a block can be achieved through mutual agreements by property owners to paint their buildings at the same time with the same or compatible colors. Sharing contracting services will not only enhance the visual quality of the block but will result in reduced costs to the individual property owners.

All repair and Re-pointing work should be completed before painting begins, and deposits of dirt or powdered masonry should be brushed off wall and ornamented surfaces. Acrylic latex house paints are the best for this use since they produce a matte finish and contain no oil base ingredients to react chemically with mortar elements.

Whenever it is determined to paint the decorative stone or brick trim of a brick building, all of the trim components, including the front steps, porches, basements, cornices, and window enframements, and other components, should be painted the same color. If, on commercial buildings, the cornice and storefront(s) are tin and/or cast iron, these should be painted the same as the stone trim. The elegant proportions of a building can be seriously altered if some parts are painted with different colors. Because the original character of most masonry buildings depends upon the contrast of brick walls and stone trim, this technique should be reproduced whenever possible.

Re-pointing

Nineteenth century mortar was composed of lime, sand, and water. Lime, the binding agent in mortar, may over many years leach out of mortar joints because of its chemical and physical nature and thereby leave the joints greatly weakened. Since this leaching effect is a result of contact with moisture and air at the surface of the joint, the eroding process works progressively from the outside inward. Except in severe cases this process can be halted and the building adequately stabilized by the process of Re-pointing.

Re-pointing, or tuck pointing, consists of raking out the old mortar joint to a proper depth, thoroughly cleaning the joint sides, and refilling the joint with new mortar. After hardening, the new mortar assures the protection and stability of the brick wall for many years to come.

If the brick is to be painted after Re-pointing, there is no need to duplicate the appearance of the old lime mortar. In this case, a good commercially available masonry mortar that expands slightly on drying is recommended. If however, the brick is to be left natural, it is desirable to simulate the old lime and sand mortars. A mixture consisting of one part of white masonry cement, two parts of lime, and seven parts of the smallest available mesh sand is recommended.

Every attempt should be made to match the color of the original or existing mortar, a job that is sometimes difficult because of a basic difference between nineteenth century lime and the commercially produced lime presently available. Commercially produced dyes in powder form are available for coloring mortar. Several test samples should be mixed and allowed to dry to insure the closest possible color match before proceeding with the general Re-pointing job. Matching the color of the mortar is equally as important as matching the color, texture, and size of the brick or stone if the repair job is to be as unobtrusive and as least offensive as possible.

In general, the mortar joint should be concave, as this gives the best appearance and the greatest bond of mortar to brick. If possible, the type of original joint should be ascertained and duplicated in the new work.

Sealing Joints

Flashings, coping stones, and capping bricks are very important to the integrity of a wall and to its longevity. If parapet walls exist and are topped by coping stones or capping bricks, the joints of the stones or bricks should be carefully repaired.

The use of a one-part sealant or a liquid synthetic rubber sealant in the joints is advisable. The condition of the flashing where the roof meets the parapet is important. Flashings and counter-flashings must be in perfect condition to prevent water from entering at this critical junction.

Removing the parapets to prevent water leakage is not necessary if these procedures are carefully followed. Removing the parapets is also not recommended as it destroys an essential feature of the building's architectural character and style.

Windows and other openings should be caulked, preferably with polysulfide or silicone synthetic sealants. These are obtainable in many colors and can be matched to the finished paint or trim. They offer as much as 15 years of flexible life compared to the normal 5 year maximum for regular, oil-based caulking materials.

Though caulking is often included in the painting specifications of a job, it is recommended that this be done as part of the masonry restoration, for it is actually a part of the waterproofing of the building.

These techniques and specifications have been adapted from "The Montpelier Cityscape Workbook, A Guide for Development in the Design Control District", prepared by Robert Burley Associates, Waitsfield, Vermont.